

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method, in a data processing system, for optimizing runtime execution of a computer program, comprising:

modifying performance profile data accumulated during a trace of a computer program execution to form annotated performance profile data, wherein the annotated performance profile data includes annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and on performance indicators ~~[[being]]~~ associated with one or more portions of the computer program;

obtaining code for the computer program;

determining a manner for compiling the code to provide ~~one or more~~ a plurality of optimizations to the runtime execution of the computer program based on the performance profile data and on the annotations of the annotated performance profile data, wherein the ~~one or more~~ plurality of optimizations comprises include at least one of an optimization to instruction paths of the computer program at branch points such that a contiguous execution of instructions within the computer program is achieved, and an optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines, wherein the optimization to instruction paths of the computer program at branch points such that a contiguous execution of instructions within the computer program is achieved comprises determining paths of execution that are followed more often than other paths of execution, and making a path that is executed more often at the branch contiguous with the branch instruction, and wherein the optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines comprises determining from the performance profile data that there is a problem with false cache line sharing in execution of the computer program, and arranging the instructions or data in memory in a manner that minimizes cache line sharing;

presenting the ~~one or more optimizations~~ plurality of optimizations to a programmer for selection using a ~~one or more~~ graphical user interface ~~interfaces~~;

receiving one or more selected optimizations of the plurality of ~~one or more~~ optimizations selected by the programmer; and

compiling the code using the one or more selected optimizations to generate an optimized computer program.

2-10. (Canceled)

11. (Currently amended) A computer program product recorded in a recordable-type computer readable medium for optimizing runtime execution of a computer program, comprising:

first instructions for modifying performance profile data accumulated during a trace of a computer program execution to form annotated performance profile data, wherein the annotated performance profile data includes annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and on performance indicators ~~[[being]]~~ associated with one or more portions of the computer program;

second instructions for obtaining code for the computer program;

third instructions for determining a manner for compiling the code to provide ~~one or more~~ a plurality of optimizations to the runtime execution of the computer program based on the performance profile data and on the annotations of the annotated performance profile data, wherein the ~~one or more~~ plurality of optimizations comprises ~~include at least one of~~ an optimization to instruction paths of the computer program at branch points such that a contiguous execution of instructions within the computer program is achieved, and an optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines, wherein the optimization to instruction paths of the computer program at branch points such that a contiguous execution of instructions within the computer program is achieved comprises determining paths of execution that are followed more often than other paths of execution, and making a path that is executed more often at the branch contiguous with the branch instruction, and wherein the optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines comprises determining from the performance profile data that there is a problem with false cache line sharing in execution of the computer program, and arranging the instructions or data in memory in a manner that minimizes cache line sharing;

fourth instructions for presenting the ~~one or more~~ plurality of optimizations to a programmer for selection using ~~one or more~~ a graphical user interface ~~interfaces~~;

fifth instructions for receiving one or more selected optimizations of the plurality of ~~one or more~~ optimizations selected by the programmer; and

sixth instructions for compiling the code using the one or more selected optimizations to generate an optimized computer program.

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12-19. (Canceled)

20. (Currently amended) A system for optimizing runtime execution of a computer program, comprising:

one or more processors, the one or more processors including:

means for modifying performance profile data accumulated during a trace of a computer program execution to form annotated performance profile data, wherein the annotated performance profile data includes annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and on performance indicators ~~[[being]]~~ associated with one or more portions of the computer program;

means for obtaining code for the computer program;

means for determining a manner for compiling the code to provide ~~one or more~~ a plurality of optimizations to the runtime execution of the computer program based on the performance profile data and on the annotations of the annotated performance profile data, wherein the ~~one or more~~ plurality of optimizations comprises include at least one of an optimization to instruction paths of the computer program at branch points such that a contiguous execution of instructions within the computer program is achieved, and an optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines, wherein the optimization to instruction paths of the computer program at branch points such that a contiguous execution of instructions within the computer program is achieved comprises determining paths of execution that are followed more often than other paths of execution, and making a path that is executed more often at the branch contiguous with the branch instruction, and wherein the optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines comprises determining from the performance profile data that there is a problem with false cache line sharing in execution of the computer program, and arranging the instructions or data in memory in a manner that minimizes cache line sharing;

means for presenting the ~~one or more~~ plurality of optimizations to a programmer for selection using ~~one or more~~ a graphical user interface interfaces;

means for receiving one or more selected optimizations of the ~~one or more~~ plurality of optimizations selected by the programmer; and

means for compiling the code using the one or more selected optimizations to generate an optimized computer program.